Influence of Race on the Management of Lower Extremity Ischemia: Revascularization vs Amputation

Conclusions: Black patients have greater odds of undergoing amputation than white patients. This is even after correcting for an array of confounding parameters. Disparity is magnified in settings where resources are greatest.

Summary: A number of studies have suggested that among patients with critical lower extremity ischemia (CLI), white patients are more likely to undergo an attempt at limb salvage with revascularization than nonwhite patients, who are more likely to undergo amputation (Gornick ME et al, N Engl J Med 1996;335:791-9; and Feinglass J et al, J Vasc Surg 2005;41:283-9). Possible explanations for these differences in patterns of care have been broadly categorized as institutional-level, patient-level, and health care provider-level factors. Differences in amputation rates between white and nonwhite patients have largely been attributed to differences in access to care. The suggestion is that nonwhite patients have less access to hospitals and physicians capable of providing high-quality revascularization procedures. The authors sought to investigate factors that may contribute to a racial disparity in amputation rates. They focused on several questions: (1) Are there significant differences in the type of hospital with respect to capacity to perform advanced revascularization procedures at which white and nonwhite patients with lower extremity ischemia receive care? (2) Are there differences in hospital capabilities that independently affect racial disparity in treatment? And using wealth of zip code areas as an indicator of local resources, (3) Do local resources have an independent impact on racial disparities in care of the patient with CLI? The authors used all hospital discharge records from the Nationwide Inpatient Sample of adult patients with a primary diagnosis of CLI from 2002 to 2008. There were 774,399 records examined with multiple logistic regression analysis. Controlling for confounding factors, black patients had 1.77 times the odds of receiving an amputation compared with white patients (95% confidence interval [CI], 1.72-1.84; P < .001). Paradoxically, additionally analysis revealed the black-to-white odds ratio increased with increasing revascularization capacity of the treating hospital, from a low of 1.43 (95% CI, 1.23-1.65) to a high of 1.98 (95% CI, 1.83-2.24). Surprisingly, amputation disparity by race also increased for patients living in wealthier zip codes.

Comment: In this study of patients with CLI, being black, independent of other variables, increased the odds of amputation by 78%. White patients, those with private insurance, those living in the wealthiest zip codes, and those cared for at teaching hospitals all independently had increased odds of revascularization. However, racial disparity between amputations in black and white patients was highest within hospitals with the greatest capacity for revascularization and was greater among those residing in wealthier zip codes. The final conclusion is that it is not necessary access to health care but race-specific factors with respect to CLI that are most important in determining amputation rate. Although there are certainly problems with data dredging from large multi-institutional data bases, the concept that biologic rather than social differences contribute to outcomes in patients with vascular disease, particularly those with lower extremity ischemia, deserves further investigation.

Comparison of Outcomes for Open Abdominal Aortic Aneurysm Repair and Endovascular Repair in Patients With Chronic Renal Insufficiency

Conclusions: Endovascular aneurysm repair (EVAR) should be preferred over open aneurysm repair (OPEN) in patients with moderate renal dysfunction provided there is adequate anatomy for EVAR. High postoperative complications in patients with abdominal aortic aneurysm (AAA) treated with either OPEN or EVAR suggest the need for a higher threshold for AAA repair in patients with renal insufficiency.

Summary: Renal insufficiency is an independent predictor of early and late mortality after OPEN AAA repair and EVAR (Ohrlander T et al, Vasc Med 2011;16:422-7; and Mills JL Sr, et al, J Vasc Surg 2008;47:1141-9). Use of intra-arterial contrast with EVAR and in follow-up is also postulated to result in up to a 10% decrease in creatinine clearance after the first year (Alsac JM et al, J Vasc Surg 2005;41:926-30). However, up to 20% of AAA patients with OPEN repair also have a decrease in renal function postoperatively (Nathan DP et al, J Vasc Surg 2011;54:1237-43). In this study, the authors used the National Surgical Quality Improvement Program (NSQIP) database to determine which approach, EVAR or OPEN, for AAA repair is preferable in patients with renal insufficiency. The NSQIP database from 2005 to 2010 was used to identify patients who underwent EVAR and OPEN repair for infrarenal AAA during that time period. The preoperative estimated glomerular filtration rate (eGFR) was calculated by the Chronic Kidney Disease Epidemiology Collaboration equation. Patients with chronic renal insufficiency were stratified into two groups: moderate (eGFR = 30-60 mL/min) and severe (eGFR <30 mL/min) renal dysfunction. A multivariate regression model was used for data analysis. There were 13,191 patients identified who underwent AAA repair, 9877 who underwent EVAR, and 3314 who underwent OPEN repair. The eGFR in 40% of patients was <60 mL/min. Overall, EVAR patients had lower 30-day mortality (odds ratio, 0.74; 95% confidence interval, 2.63-5.32; P < .001). EVAR patients were also less likely to have renal, pulmonary, or cardiovascular events and less likely to have combined postoperative events (odds ratios of 3.0, 5.5, 2.0, and 4.3, respectively; P < .001 for all). In patients with moderate renal dysfunction, OPEN repair had a 3.6-times higher risk of postoperative renal impairment and a 5.1-times higher risk of dialysis than EVAR. In patients with severe renal dysfunction, there was no benefit of EVAR over OPEN repair, with both methods of repair having significantly higher complication rates than in patients with moderate renal dysfunction.

Comment: The discussants of the paper at the Annual Meeting of the American Surgical Association pointed out two key questions relevant to the paper. The first was without knowing the anatomy of the aneurysms in the OPEN and EVAR groups, it is difficult to compare the two groups, in that, presumably, there may be anatomic reasons why OPEN repair was performed over EVAR that could influence postoperative complication rates. The relative safety of EVAR vs OPEN repair in patients with renal insufficiency therefore may be exaggerated by differences in anatomy. Nevertheless, as Dr Ricotta points out, this paper does indicate that one can safely perform EVAR in patients with moderate renal insufficiency.

Association Between Advanced Age and Vascular Disease in Different Arterial Territories: A Population Database of Over 3.6 Million Subjects

Conclusions: More than 20% and 30% of octogenarians and nonagenarians, respectively, have vascular disease in at least one arterial territory.

Summary: Much of the data concerning the epidemiology of vascular disease derives from meta-analysis or from small screening studies that have only small numbers of octogenarians and nonagenarians. However, increasing age is a well-known risk factor for atherosclerosis. The precise association of advanced age with vascular disease of different peripheral arterial locations has not been studied in detail. The authors used a group of >3.6 million individuals to determine the relationship between advanced age and vascular disease with respect to lower extremity peripheral arterial disease (PAD), carotid artery stenosis, and abdominal aortic aneurysm, with prevalence stratified by decade of life. The study was based on data provided by Life Line Screening Inc (Independence, Ohio) to the Society for Vascular Surgery for research purposes. Participants in Life Line Screening are self-referred individuals who pay out-of-pocket for vascular screening tests. The data incorporated screenings from 2003 to 2008 from >20,000 sites nationwide. Individuals being screened completed a medical and lifestyle questionnaire and were evaluated by ankle-brachial indices, with <0.90 indicating PAD, ultrasound imaging for carotid artery stenosis >50%, and abdominal aortic aneurysm, defined as an abdominal aorta ≥3 cm. Multivariate logistic regression analysis was used to estimate odds of disease in different age categories. Overall, prevalence of PAD, ...